

ABSTRACT

A manufacturing method of a semiconductor device is disclosed whereby an oxide layer and a nitride layer are successively formed on a semiconductor substrate. An opening is then formed in the oxide and nitride layers on a field region of the semiconductor substrate. A trench is formed by etching the field region of the semiconductor substrate. The oxide layer and the nitride layer are then removed. A silicon epitaxial layer is grown on the semiconductor substrate including the trench, and finally an oxide layer is deposited in the trench. The silicon epitaxial layer has an increased thickness at the sidewall relative to the bottom face, such that the trench having a finer width is formed.